First Record of *Thecostegites* (Cnidaria: Tabulata) from Central New South Wales

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Thecostegites myolaensis, a new species of tabulate coral, is described from northwest of Parkes, New South Wales. This is the only record of *Thecostegites* from the Australian mainland. Associated conodonts establish a latest Ludlow (Late Silurian) age for this species, making this the oldest recorded occurrence of the genus. Comparison with *Thecostegites* species from the Pridoli of Tadzhikistan and the Polar Urals suggests that the genus originated in Australia and subsequently spread to these regions.

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KEYWORDS: Late Silurian, palaeobiogeography, tabulate coral, *Thecostegites*.

INTRODUCTION

The Australian record of the tabulate coral genus *Thecostegites* is scant, with the only described species being *T. ejuncidus* Jell and Hill, 1969, from the Point Hibbs Limestone (Pragian, Early Devonian) of Tasmania. An older species, the earliest known representative of the genus, is here described as the new species *T. myolaensis*. Its sole occurrence is in Late Silurian limestone on the property 'Myola', located 5 km southwest of the town of Trundle, 55 km northwest of the city of Parkes in central New South Wales (Fig.1). The limestone contains abundant tabulate and rugose corals and stromatoporoids, and is the probable type locality for the stromatoporoid *Clathrodictyon (Plexodictyon) conophoroides* Etheridge, 1921 (Pickett and Ingpen 1990; Foldvary 2000). Sherwin (1996) mapped this limestone as part of the Cookeys Plains Formation within the Derriwong Group, assigning to it a Pridoli (latest Silurian) to early Lochkovian (earliest Devonian) age. He mentioned the occurrence of the conodont *Ozarkodina crispa*, the nominate species of the *crispa* zone, at a locality southeast of Trundle reported by Pickett and Ingpen (1990, cover photos E and F) and agreed with them that the age may be slightly older than Pridoli. A latest Ludlow age is definitively established for the limestone at the 'Myola' locality by the presence of *O. crispa* (Pickett and Ingpen, cover photo A). Simpson and Talent (1995) concur with a latest Ludlow *crispa* zone age for these localities.

AGE AND BIOGEOGRAPHIC CONSIDERATIONS

Thecostegites is well known from the Middle Devonian of North America and the Middle and Late Devonian of Europe and Asia. Nudds and Sepkoski (1993) mentioned a *Thecostegites* from the Late Silurian or Early Devonian of the Polar Urals as the oldest known *Thecostegites*. This is most likely *Thecostegites tchernychevi* Barskaya, 1965, from the Greben Horizon in the Chernova Swell in the Polar Urals (fide Chudinova 1986, Dubatolov et al. 1986). Both Chudinova and Dubatolov et al. gave an "Upper Ludlow" age for this locality, but the Greben Horizon is now known to be Pridoli (Talent et al. 2001). Of comparable age is *Thecostegites isfaraensis* Chekovich, 1960, from the Isfara Horizon in Southern Fergana, Uzbekistan. Although in the original description of this species the age is given as "Upper Ludlow", the upper part of the Isfara Horizon is now also regarded as Pridoli (Talent et al. 2001). Note that, in the original publication of *T. isfaraensis*, Chekovich (1960) used the specific epithet '*isfardensis*' in the text but labelled the illustrations

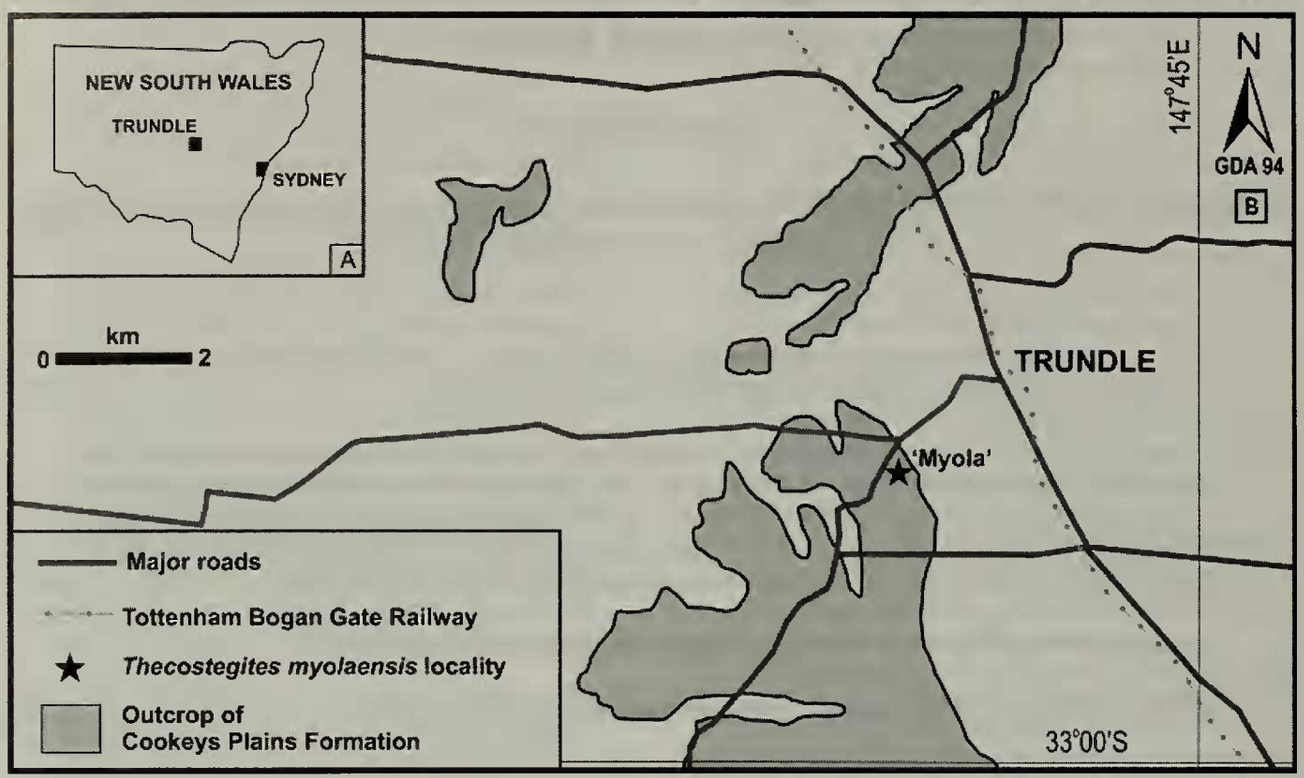

Figure 1. A; Map of New South Wales showing general location of Trundle area, B; Map of Trundle area showing outcrop of Cookeys Plains Formation and location of *Thecostegites myolaensis* (indicated by star).

as *T. isfaraensis*. Subsequently Chudinova (1986) used the name *T. isfardensis* when referring to this species. This appears to be a case of *lapsus calami* which I have corrected in accordance with ICZN 32.5.1 by using the spelling '*isfaraensis*' to reflect the stratigraphic occurrence of the type species.

Thecostegites myolaensis is the only species known from mainland Australia and, with its age established as late Ludlow, is also considerably older than the only other Australian species *T. ejuncidus*, known from the Early Devonian of Tasmania.

Although the geological record of *Thecostegites* is patchy and undoubtedly incomplete, the available data indicate that that the earliest known species is *T. myolaensis*. Species known from Uzbekistan and the Polar Urals are of slightly younger, Pridoli age. This suggests that the genus originated in Australia and subsequently spread to these regions. As these two areas were remote from Eastern Australia according to Late Silurian reconstructions of global continental distribution (Cocks and Torsvik 2002) it is difficult to demonstrate a migration of *Thecostegites* without occurrences (as yet undetected) in intervening regions.

SYSTEMATIC PALAEONTOLOGY

Order AULOPORIDA Sokolov, 1947
Superfamily SYRINGOPORICAE de Fromentel, 1861
Family THECOSTEGITIDAE de Fromentel, 1861
Genus *Thecostegites* Milne-Edwards & Haime, 1849, p.261

Type species

Harmodites bouchardi Michelin, 1846, from the Upper Devonian (Frasnian) at Ferques near Boulogne, France, (by monotypy).

Diagnosis (Hill, 1981, p. 660)

Corallum massive and encrusting; corallites slender, cylindrical, thick-walled, united by successive irregular platform-like expansions of tabulate tissue, each expansion in communication with the tabularia through perforations arranged in verticils in the walls of the corallites; the expansions may be epithecate above and below; septal spines irregular in development; tabulae in lateral expansions as well as in the cylindrical corallites, irregular, horizontal,

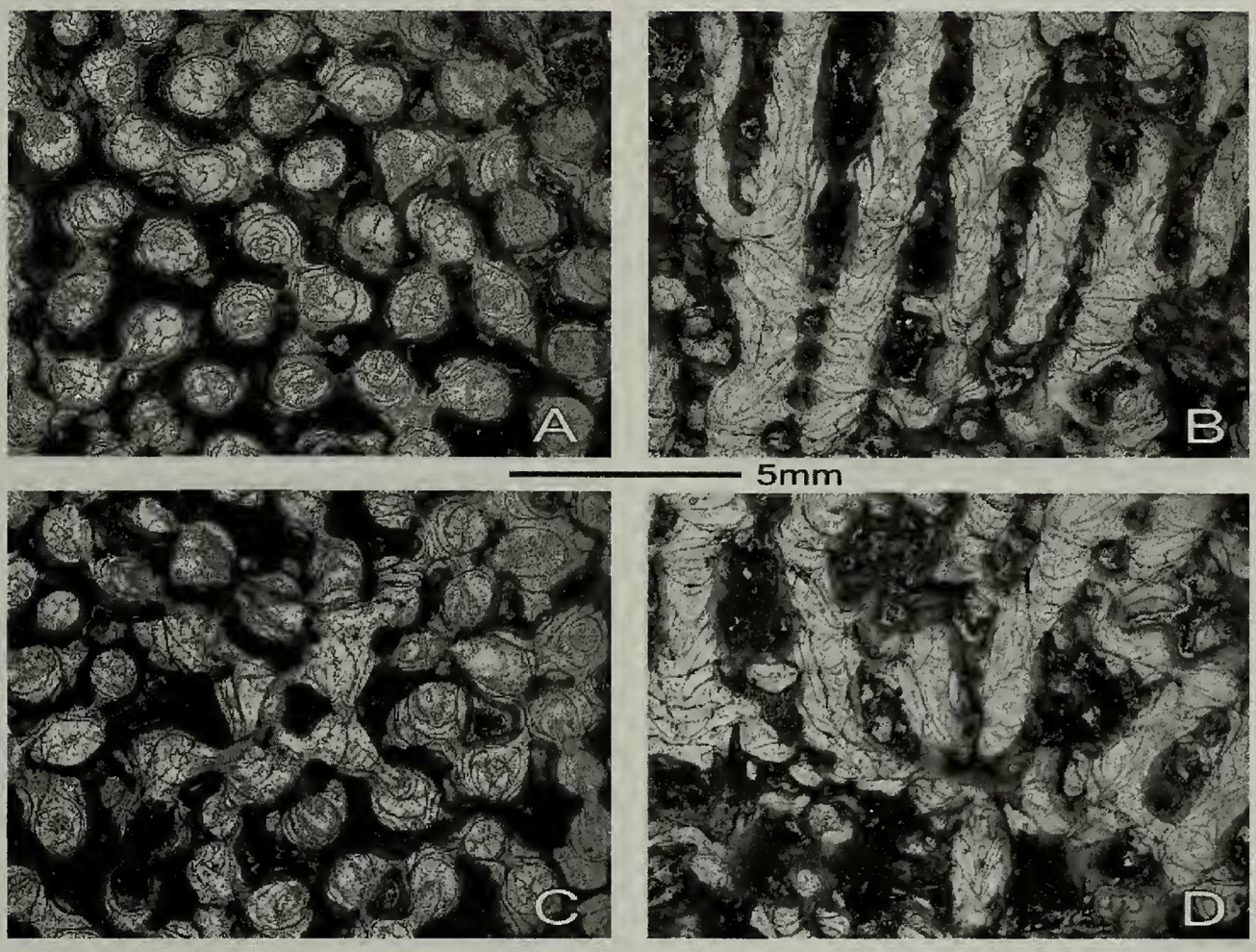

Figure 2. ***Thecostegites myolaensis*** **sp. nov. holotype MMF 44854a-b. A, Transverse section showing chains of interconnected corallites. B, Longitudinal section showing connecting tubes and a new corallite branching off an adult with a deeply depressed tabula extending into the adult. C, Transverse section showing merging of corallites to produce a platform-like area. D, Longitudinal section showing vertical corallites arising from prostrate corallites in a part of the corallum where growth has been interrupted. Scale bar equals 5 mm.**

oblique, concave or with short axial tubes, which may extend into the lateral expansions where they lie horizontally, and may be crossed by small tabellae.

Thecostegites myolaensis sp. nov.
Fig. 2 A-D

Diagnosis

Thecostegites with long, closely spaced corallites 1.1 to 1.5 mm. diameter, connected by short verticillate tubular to platform-like lateral expansions; septal spines absent; tabulae numerous, thin and steeply inclined and incomplete or deeply depressed, occasionally horizontal with a median depression.

Derivation of name

After the property "Myola" where the specimen was found.

Type Locality

Roadside paddock on "Myola" property (Trundle 1:50,000 map, grid reference 644549). Locality 'D' of Pickett and Ingpen 1990 and locality 'X' of Foldvary 2000.

Holotype (and sole specimen)

Two pieces of a single corallum MMF 44854a-b with one transverse and one longitudinal section.

Description

Corallites are long and closely spaced. Their diameter ranges from 1.1 to 1.5 mm with an average of 1.4 mm. Wall thickness ranges from 0.13 to 0.2 mm with an average thickness of 0.16 mm. Corallites connected by numerous short verticillate tubes spaced 5 to 7 per 5 mm. Tubes occur at the same level on several adjoining corallites, resulting in long

chains of connected corallites visible in transverse section (Fig 2 A, C). Corallites increase in diameter at the connecting tubes and sometimes merge to form platform-like areas (Fig. 2 C). In the distal portion of the colony corallites reach a maximum length of 18 mm.

Tabulae range from 11 to 17 per 5 mm. They are usually steeply inclined and incomplete or deeply depressed; rarely horizontal to slightly inclined with a median depression and rarely forming a syrinx. They pass through tubes into adjoining corallites and are usually thin but sometimes thicken near corallite walls. Horizontal tabulae are more common where connecting tubes occur. Septal spines are absent.

In the proximal portion of the corallum some of the vertical corallites arise from prostrate corallites. This also occurs in portions of the corallum where growth has been interrupted (Fig. 2 D). Increase is lateral, non-parricidal and occurs via a connecting tube in the parent corallite. A deeply depressed tabula passes from the parent into the new corallite (Fig. 2 B).

Remarks

The corallum is approximately 120 mm across and 45 mm high and has broken into two equal sized pieces. It has grown on a corallum of *Heliolites daintreei.*

The new species differs from *T. ejuncidus* in possessing larger corallites, having more abundant steeply inclined tabulae and lacking septal spines.

Thecostegites myolaensis has a similar corallite diameter to *T.isfaraensis* but horizontal tabulae are more abundant in the latter. This also distinguishes *T.myolaensis* from *T. tchernychevi*, which has a similar corallite diameter to *T. ejuncidus* (Fig. 3).

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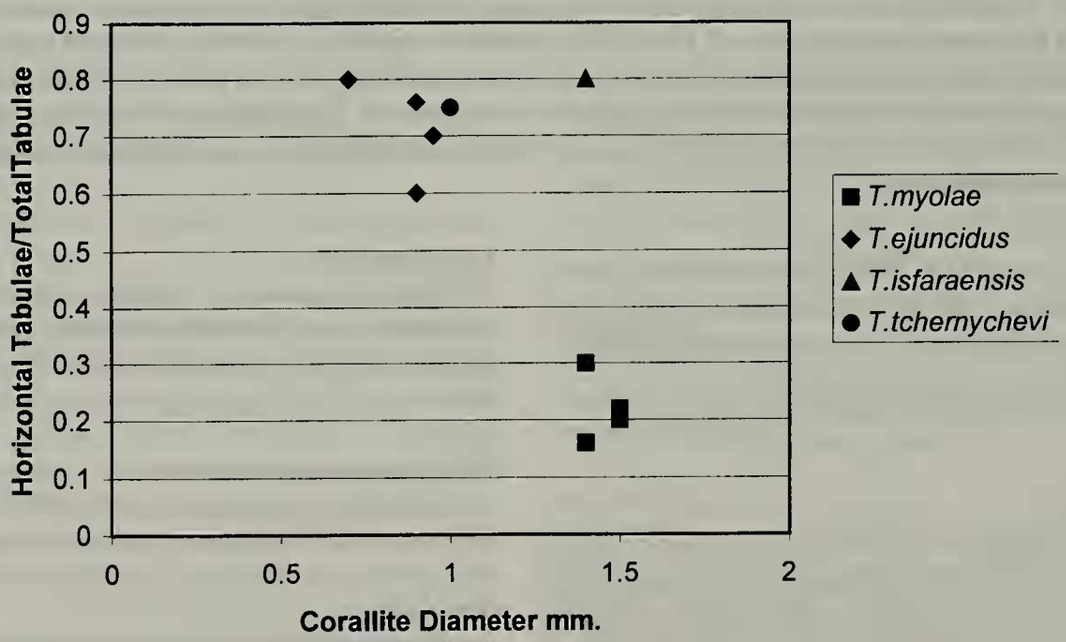

Figure 3. Scatter plot of horizontal tabulae/total tabulae vs. corallite diameter for *T. myolaensis*, *T. ejuncidus*, *T. isfaraensis* and *T. tchernychevi*. Data for *T. myolaensis* and *T. ejuncidus* were obtained from specimens. Data for *T. isfaraensis* and *T. tchernychevi* were obtained from published measurements and illustrations.

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